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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



November 15, 1941

Peruvian Nokomis

See Page 310

A SCIENCE SERVICE PUBLICATION

Do You Know?

For eyeglass wearers who like to play badminton and ball games, a transparent *plastic vizor* has been devised.

A dental surgeon explains that the final forward and downward growth of the *face* occurs between 16 and 19 years of age.

Fixatives in perfume have been compared to butter in a refrigerator: they absorb combined odors and bind them into one.

The world's shortest *railroad* is a 25-foot strip of track in Wyoming, used to teach Army drivers how to approach a crossing.

Wooden apples are used by the Farm Security Administration to teach apple packing at a Washington State migrant labor camp.

Portable pipe lines have been developed by the U. S. Army for piping gasoline over difficult terrain to motorized units in the field.

Pronounced toughest of farm animals, some British *pigs* are said to sleep through air raids, even when roofs overhead are wrecked.

New Englanders cannot quite claim that Mt. Washington has the world's worst *climate*, says Dr. C. F. Brooks, noted meteorologist; but he adds that the mountain's high winds, cold, fogs, and wetness make the summit at worst a close rival of Antarctica's "home of the blizzard."

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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PUBLIC HEALTH

What happened to the pneumonia death rate during the last influenza epidemic? p. 316.

What has latitude to do with susceptibility to diphtheria? p. 313.

What two ills plague the Southern states? p. 310.

Nylon bearings for machinery have been patented.

Wood kept dry, say Government scientists, is a permanent building material; there is no true "dry rot," and fungi cannot grow in wood containing less than 20% moisture.

Recent study of archives reveals that *Japanese* people knew much more about Western civilization in the first half of the nineteenth century than Western people knew about Japan.

According to Chinese statistics, more than 3,000,000 Chinese are in *Thailand*.

England's famous *architect*, Christopher Wren, was also an astronomer, physicist, meteorologist, mathematician, chemist, and inventor.

British Home Guards, taught to *camouflage* themselves, are warned not to try to look like a tree if you will have to move—best thing is to look like "nothing special" and fade into shapes and shadows of environment.

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ASTRONOMY

Astronomers Find Sun Is More Distant Than Thought

New Figure, Arrived at After Decade of Calculation, Of Great Importance as Astronomers' Yardstick

ASTRONOMERS were somewhat shocked to find, according to their most recent measurements, that the sun is more than 100,000 miles farther from the earth than was previously supposed. These measurements now give its mean distance as 93,003,000 miles in place of the formerly accepted 92,870,000 miles.

The layman is not likely to get unduly excited over this correction to a figure that has never meant much to him, especially in these days of terrible world-shaking events, but to the astronomer it is of the utmost importance. The sun's mean distance is the astronomer's yardstick by which he measures everything in the Universe. He calls it the astronomical unit and writes it AU. Any change in this unit means that every other dimension in the Universe has to be changed.

On this unit depend our figures for the masses of the earth, sun and moon, and on these depend in turn the accuracy of tide predictions and of navigations. So, you see, it affects practical matters after all.

Because of the importance of this

unit, the sun's distance, astronomers have been measuring and remeasuring it from the time when the Greek astronomer Aristarchus made the first attempt two and a half centuries before the birth of Christ down to the present time—and always striving for greater and greater accuracy.

Evidence of the vast care and labor which astronomers expend on this task is the fact that the present new figure was arrived at after ten years of calculations. They were based on thousands of observations made on the tiny asteroid Eros on its last close approach to the earth in 1931, when it came to within 16,200,000 miles of us.

The calculations were made by Dr. H. Spencer Jones, Astronomer Royal of England, and were announced at the June and July meetings of the Royal Astronomical Society. They have now been reported in the first issue of the new magazine, *Sky and Telescope*, issued from Harvard College Observatory.

The long time consumed in the calculations, Dr. Jones explained, was due to the fact that the material was gathered

from all over the world, and much of it was late in coming in.

But, after all that trouble and labor, the new figure is not yet definitely accepted by astronomers. The calculations so far have been purely geometric—they have involved only angles, lengths and positions. The same data can be used to determine the gravitational attractions or perturbations of the sun and earth on Eros during the time of its close approach. These give new measures of the masses of the sun and earth from which the distance can be determined. This gravitational method is considered even more accurate than the purely geometrical one. Its results must be awaited before astronomers can make a final decision as to the value of the astronomical unit—the celestial yardstick.

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MEDICINE

Effective Cancer Treatment From Concentration Method

A NEW method of treating cancer of the mouth, pharynx and larynx which appears to be more effective than similar methods now in use is reported by Dr. Max Cutler, of the Chicago Tumor Institute (*Journal, American Medical Association*, Nov. 8).

The new method is called the "concentration method of radiotherapy." It has been given to some 850 patients at the Chicago Tumor Institute and the Hines Veterans Hospital during the last three and one-half years.

"Certain carcinomas (cancers) of the mouth, larynx and pharynx which failed to respond to all other methods of external irradiation have shown marked regression and in many instances have disappeared completely" following treatment with the new method, Dr. Cutler reports. He points out, however, that it is still too soon to know whether or not permanent cures have been achieved by this method.

The method consists in giving higher daily doses of X-rays or radium over a shorter total period of treatment than have been customary, the doses in some cases being increased daily and concentrated on a smaller and smaller area in order to increase the attack on the more resistant part of the cancer. In some cases the treatment is given in two cycles separated by a period of 11 to 15 days. The results so far are sufficiently good to encourage further use of this method.

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FLYING WING

This is the novel design, so long a carefully guarded military secret—the Northrup "Flying Wing," housing motor, personnel and huge cargo space within the airfoil and with radically new control means which do not show in the photograph for military reasons.

ASTRONOMY

Sun Refuels Self From Space; It Sweeps Up Hydrogen Gas

Something Like 110,000,000 Tons of Gas Taken Up
Each Second If New Astronomical Theory Is Correct

EVERY second the sun sweeps up something like 110,000,000 tons of hydrogen from the space through which it is passing if a new astronomical theory is correct!

Other stars pick up similar amounts of the interstellar gas, and thus keep refueled. This is the suggestion of two Cambridge University astronomers, Dr. R. A. Lyttleton and F. Hoyle. A summary of their theory, answering certain objections that had been made to it, is given in the latest issue of the *Monthly Notices of the Royal Astronomical Society*, just received in the United States.

During the last few years astronomers have generally accepted the idea that the stars keep going by a transmutation process in which hydrogen turns into helium, giving off energy as it does so. However, the Cambridge scientists state, "the available astronomical evidence, particularly from double stars, led us to the view that a further potential source of energy must be introduced from outside the stars, either continually or intermittently replenishing the hydrogen in the star."

As it is now known that space between the stars is not the perfectly empty void it was once thought to be, but contains about as much matter as the stars themselves, in the form of diffuse clouds, they concluded that the stars might sweep up hydrogen from these clouds as they went through them. Though these clouds consist largely of calcium and sodium, which would not add to the stars' lives, as little as 10% of their mass in hydrogen in the form of molecules would suffice to keep the stars going. Recent observations have shown that molecules containing hydrogen actually are present in the cosmic clouds.

They also suppose that the cloud is irregular, and is concentrated towards the central plane of the Milky Way. Here, they calculate, the density would be such that a gram of matter (which is about a twenty-eighth of an ounce) would be contained in a cube some 1300 miles on a side. Studies of other systems

like the Milky Way have shown that they are about as dense as this in their centers. Dr. Lyttleton and Mr. Hoyle regard as supporting evidence for this idea the fact that the brightest and most massive stars are in the plane of the Milky Way. Evidently these pick up more matter and fuel than stars in thinner regions.

"The real need at present in this problem," they conclude, "is for trustworthy observations leading to information of the density distributions and velocities of the stars relative to the cloud." These might confirm the theory, disprove it, or require it to be modified. "At present," it is stated, "in regard to stellar

evolution, the choice is between the consistent theory based on the idea of accretion and no theory at all."

Science News Letter, November 15, 1941

ENTOMOLOGY

Electron Microscope Shows Insect Body Structure

MINUTE structures in the tiny anatomy of an insect, hitherto unknown and unsuspected, have been disclosed under the hundred-thousand-fold magnifications of the electron microscope in the RCA laboratories. The breathing tubes in the sides of a mosquito's body are shown to be lined with elastic hoops a fifty-thousandth of an inch broad. These in turn are covered with submicroscopic spines less than a quarter-millionth of an inch high.

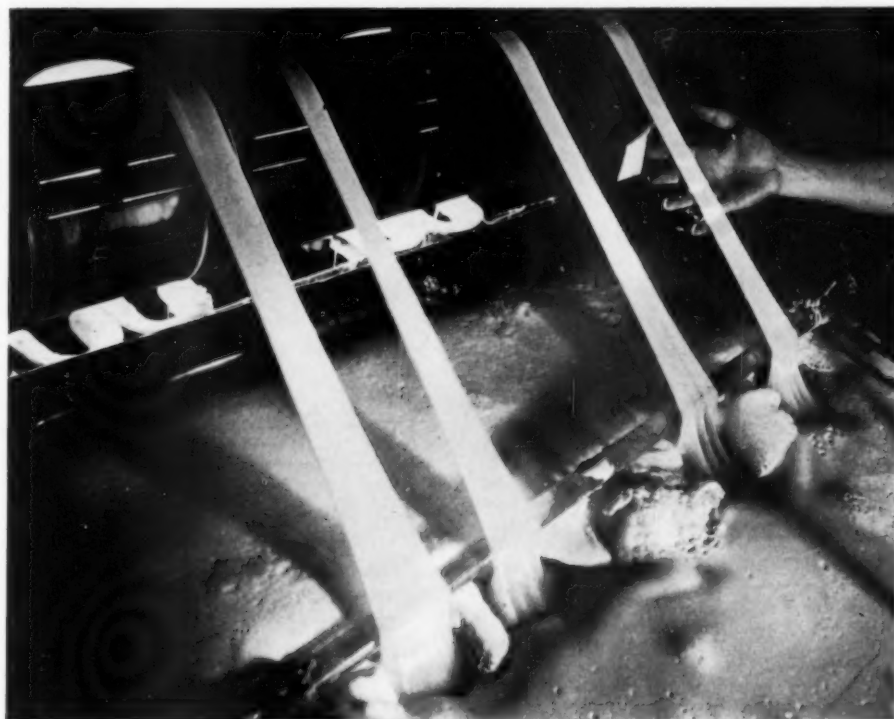
Other submicroscopic studies are being made on skin, wings and bristles of butterflies, bees, flies, beetles and cockroaches. The powerful instrument is being used to disclose details of the shells of their tiny eggs.

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FIBER FROM MILK

Here it is cut into short lengths for blending with other fibers used in the textile industry, such as cotton, wool, mohair, rayon or hat fur. But the milk fiber can be cut to any length desired from a half inch to a half mile.



"SPINNING" MILK

Four spinnerets are concealed beneath the foamy mass in the spinning box. The four "tapes" are really thousands of strands of fiber. Look at the hand and see how translucent they are.

CHEMISTRY

New Process Makes Fabrics From Cow's Milk Practical

More Expensive Than Rayon and Cotton, But Cheaper Than Wool and Fur, New Fabrics Are Now Being Made

Americans will be wearing dresses and other clothes made from milk by spring, and Bossy the cow will be launched in a new role as fashion aid, is the forecast by dairy products researchers.

Success in processing a new textile fiber from casein, by-product of skim milk, after four years of experimenting, is cause for the predictions by the National Dairy Products Corporation.

The fiber is said to be the first derived from milk which is "acceptable to the American textile industry," and fabrics are now being manufactured containing threads of milk.

Described as more expensive than rayon and cotton, and less expensive than wool and fur, the new fiber called "Aralac" is said to blend well with other

textile fibers and to have attractive draping quality. It is already being used as part material in felt hats.

A new-found use for the milk fiber is in protecting the hair during permanent waving. In experiments, it is reported, a special braid of the fiber proved suitable for winding with the hair ends before they are heated and waved.

A factory for producing the milk fiber at Taftville, Conn., is operating on a 24-hour basis and has a production capacity of about 5,000,000 pounds a year.

While powdered skim milk is now being routed to England in large shipments, in more normal circumstances America has literally billions of pounds of skim milk left over from butter and cream making, as potential clothing ma-

terial. The dairy research scientists say that they are now seeking new uses for the whey left over after casein is extracted from skim milk.

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DENTISTRY

Apple a Day May Keep Dentist Away—New Version

"AN APPLE a day may keep the dentist away" seems to be the new version of the old slogan about the health values of apples. A fairly firm, chewy apple, taken in generous bites that require considerable chewing, is more efficient than your toothbrush in cleansing your entire mouth, Dr. Holmes T. Knighton, of the University of Louisville, Ky., told the American Dental Association.

Oranges, eaten sliced so that you get plenty of pulp to chew on, are almost as good as apples for mouth cleansing. Dr. Knighton found in 210 tests of chewing as a mouth and teeth cleansing method.

The tests, made on 10 persons, started with eating a cake of yeast. At the end of the test, the number of yeast cells in a cubic centimeter of saliva were counted to measure the relative efficiency of the various cleansing methods.

Brushing the teeth for three minutes with tooth paste followed by rinsing with about five ounces of tap water rated 63% efficient in mouth cleansing. The apple chewing rated 96.7% efficient, with the orange a close second at 95%. Chewing paraffin also rated 95%.

Chewing gum showed to disadvantage alongside the paraffin because it steadily decreased in bulk, shrinking to one-fourth its original size after a few minutes of chewing. Its efficiency rating as a mouth cleanser was 82.7%. Eating about two ounces of a chewy candy bar rated 93%. Eating about five ounces of ripe banana rated 72.5%.

"The cleansing effects of chewing paraffin and gum may be due to the mechanical effect of friction and to increased salivation," Dr. Knighton said. "The chewy candy bar made contact with a very large percentage of the surfaces of the mouth and was soluble enough to permit even dilution of samples one hour after it was consumed. The fact that loose yeast particles were well scattered over the mouth and not merely on the teeth probably accounts for the relative inefficiency of the tooth brush."

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ARCHAEOLOGY

Wrinkled Old Woman Is Art From Peru's Indian Past

Vase Containing Her Jolly Face Is Example of Two New Cultures Found by Sons of Peruvian Vice President

By EMILY C. DAVIS

See Front Cover

THE FACE of an old woman, round and wrinkled, with toothless mouth and a button nose—this was the unexpected photograph that Senor don Rafael Larco Herrera, First Vice President of Peru, brought out to show me, on his visit here, when I asked: "Does a Vice President have time for archaeological discoveries, in Peru?"

It seems that a Vice President in Peru has no time to explore Incan or pre-Incan ruins, nor to work very much at the fascinating project of arranging one of the largest private collections of Indian pottery in all the Americas. At Sr. Larco's hacienda near Trujillo a special museum has been built to house the collections of Peruvian archaeology which his science-minded family has amassed and carefully preserves.

I asked how large the collection has grown, and Sr. Larco, thinking a minute, replied:

"There are about 20,000 exhibits at the hacienda, now. That is not merely Peruvian pottery, but includes fabrics and all the Indian arts."

A Vice President's sons, it seems, may find time to keep up the family reputation for making archaeological discoveries.

"My three sons," said Sr. Larco, "have found objects of two new cultures." And he pointed to the photograph of the old woman. For her wrinkled countenance adorns a pottery vase, which, he explained, is one of the discoveries in a new-found chapter of Peru's prehistoric past.

This Peruvian grandmother, who might remind you of Hiawatha's grandmother, if you envision a round-faced Nokomis, is a remarkable art work of Cupisnique Indian culture. This is the name of the place where the type of culture has come to light, on the coast of northern Peru. Some evidence of a distinctive, pre-Incan people not previously known, has been appearing at sites there

in the Chicama Valley, and archaeologists have given it several names. Now Sr. Larco's sons, directed by the eldest, Sr. Rafael Larco Hoyle, a former Cornell University student, have found at Cupisnique the first cemetery of these people, revealing their physical type and much more of their customs in life and death.

It is even becoming possible to place these long-forgotten Indians in time relationship to some other aborigines of Peru. For Cupisnique burials have been found in layers of earth beneath another type of Indian culture, termed Mochica, thus upholding the Larco's verdict that the Cupisnique people were early folks in the region.

Latest discovery is that an intermediate pattern of Indian culture has been identified between the old and the late. It is this intermediate pattern and the revelations of the Cupisnique cemetery that Sr. Larco would have dismissed in modest remark that his three sons have "found objects in two new cultures."

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PUBLIC HEALTH

Hookworm and Malaria Plague Southern States

By W. H. PICKETT, M.D.

Florida State Health Officer

WAGES are being lost, welfare clients increased and educational facilities wasted because certain diseases are allowed to exist even though we know how to prevent the particular disease in question. I have in mind specifically malaria and hookworm, which still exist to a profound extent in all of our Southeastern states, including Florida.

The obstacles confronted in the attempt to control these two diseases are those of (1) Ignorance (2) Indifference (3) Finance. The monetary phase of the problem is placed last because once the first two difficulties are overcome, experience has proved that money to finance the sanitation and engineering

aspects of control are usually forthcoming.

Malaria can be controlled by preventive measures such as elimination of anopheles mosquitoes, carrier of the disease, through the procedure of drainage, associated with the cooperative activity of private physicians in treatment of the sick. It is important for officials and the public generally to realize that any malaria control program must be a permanent and continuing one in which full provision is made for maintenance of the preventive measures instituted.

The simple procedure of adequate disposal of sewage or the wearing of shoes by the entire population will suffice to control hookworm infestation. The procedure is simple, the practical application appears most difficult.

The Rockefeller Foundation, Good Samaritan of the South, continues on in its good offices of assisting health boards in prevention of economic diseases and promotion of programs to improve general health conditions. Florida is grateful for the continued cooperation of the Rockefeller Foundation in the malaria control program as well as for the research works which are being conducted in various scientific fields.

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NUTRITION

Soy Beans to Help U. S. Make Milk Go Around

ATENTION of America's doctors is called to the prospect that soy beans by the ton will do defense duty, to help the United States make its milk supplies go around.

American soldiers are drinking more milk than in World War days, civilians drink more milk, dried and processed milk in increasing quantities goes to Britain, and casein from milk is wanted by industry for making plastics and for other processes, says an editorial in the *Journal of the American Medical Association* (Nov. 1).

Declaring that it is important to secure adequate substitutes for industrial uses of milk by-products, the *Journal* points out soy beans as offering encouraging aid. Federal chemists have evolved methods of preparing high-grade protein from soy beans and plans are being made to increase bean production, as a casein substitute. It will take 10,000 tons of soy bean protein a year to meet casein shortages, which are increasing, says the *Journal*.

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MEDICINE

Special Treatment Makes Beef Blood Safer for Transfusion

Substances in the Plasma Which Might Cause Clumping Can Be Removed by Previous Absorption on Human Cells

BEEF BLOOD serum and plasma can be made safer for transfusion to human patients by a method of pretreatment with human red blood cells announced by Dr. Arnold J. Kremen, of the University of Minnesota Medical School, at the meeting of the American College of Surgeons in Boston.

Substances in the beef blood plasma and serum which might cause dangerous clumping or equally dangerous dissolving of the red cells in the patient's blood can be removed by previous absorption on human blood cells, he found.

Beef serum treated in this way caused reactions to transfusions in 24.5% of the patients, compared to reactions in 52% following transfusions with the untreated beef serum. With untreated beef plasma there were reactions in 66% of the patients.

Reactions to beef serum or plasma transfusions consisted of chills, fever, hives, backaches, and stomach and intestinal upsets. In the entire groups of about 100 patients, three had severe anaphylactoid reactions. There were no deaths. About 60% of all patients developed delayed serum sickness.

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New Test for Goiter

DIAGNOSIS of overactivity of the thyroid gland in the neck, commonly thought of as goiter, may be improved by a new test, according to results with it reported by Dr. Marvin Smith, Dr. Willis H. Jondahl and Dr. Alton Ochsner, of Tulane University of Louisiana School of Medicine.

The test will be most valuable, it appears, in those patients with overactive thyroid glands who do not show a goiter and whose basal metabolic rate is normal, instead of being higher than normal. In such cases, with only a few symptoms to suggest thyroid gland disease, doctors may fail to diagnose the condition accurately and to give proper treatment. The result may be irreparable damage to other organs whose activity

is influenced by the thyroid gland which is the pacesetter for many body processes.

The test, which is based on findings of Dr. T. L. Althausen, of San Francisco, is made by giving the patient a little more than an ounce of galactose dissolved in water. Galactose is a sugar-like substance. The speed with which this chemical appears in the blood and the degree to which it accumulates there shows whether or not the patient has an overactive thyroid gland.

Thyroid glands of patients with a positive galactose test, even though they did not show other signs of increased thyroid activity, showed under the microscope signs characteristic of overactive thyroid glands.

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War Victims Saved

PATIENTS with broken bones in which the skin and other tissues are also broken open and infected with germs, a common condition in war injuries and automobile accidents, may be saved by sulfanilamide crystals implanted in the wounds, Dr. N. Kenneth Jensen, of the University of Minnesota Medical School, reported.

In 126 cases of such injuries, technically termed compound fractures, not a single case of dreaded gas gangrene and only four wound infections occurred when sulfanilamide crystals were placed directly in the wound. Without the sulfanilamide, but with the same treatment otherwise, gas gangrene developed in 7.3% of cases and other wound infections developed in 27%.

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Vitamin C Helps Healing

WOUNDS heal poorly after an operation and are likely to break open when the patient has been getting too little vitamin C, the vitamin found in tomatoes, citrus fruits and other fruits and vegetables, Dr. John B. Hartzell and Dr. William E. Stone, of Wayne

University College of Medicine, reported.

Healed wounds in guinea pigs that had been deprived of vitamin C had only one-fifth the strength, that is, could withstand only one-fifth the pull on them, of wounds in laboratory animals that had been getting a normal amount of this vitamin.

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Surgeons Use Plastic

ONE of the newer plastics, vinyl resin in acetone, painted or sprayed onto the patient's skin before an operation, helps to keep germs out of the wound, Dr. Michael DeBakey and Dr. E. J. Giles, of Tulane University of Louisiana School of Medicine, announced at the meeting of the American College of Surgeons.

Complete sterilization of the skin before the first cut is made, to avoid danger of wound infection, is the aim of every surgeon, but is difficult to achieve. Even with all the usual precautions, a resident flora of germs remain a "constant potential source of infection," the New Orleans doctors pointed out.

Vinyl resin, familiar to most people as a waterproof coating for fabrics and for its use in safety glass in automobiles, when used as a skin covering before operations has the following advantages: 1. Bacteria cannot get through it; 2. Bacteria are killed by it; 3. It is transparent; 4. It sticks to the skin; 5. It is elastic; 6. It can be easily cut through; and 7. It is not irritating.

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Cuts Appendicitis Deaths

DEATHS from acute appendicitis with perforation or rupture of the appendix have been reduced to less than five out of every 100 by the use of sulfathiazole in addition to immediate operation, Dr. Edward S. Stafford, of the Johns Hopkins University School of Medicine, reported.

Immediate operation when the appendix has ruptured reduced the deaths to 10% of all cases with perforation, which is lower than the average mortality reported from the so-called delayed treatment, Dr. Stafford found from an earlier study of patients operated at the Johns Hopkins Hospital.

During the two years since that study was reported, sulfathiazole has been used in addition to immediate operation. The death rate for this (*Turn to page 316*)

ENGINEERING

Static Reduced By Film Inside Inner Tube

DANGEROUS static electricity that develops on automobiles can be reduced by injecting two grams (15 grains) of a special conducting powder into the inner tube through the valve stem, according to a report by S. M. Cadwell, N. E. Handel and G. L. Benson, of the United States Rubber Co., to the American Chemical Society.

The powder distributes itself and adheres to the walls of the inner tube, forming a continuous conducting layer. This does not prevent the generation of static electricity on the tire tread, but the negative charge on the tread induces a positive one on the conducting layer, and the strong attraction between these two charges of opposite sign reduces the charges that would otherwise be induced on the body of the car.

Road tests of cars whose tires had received this treatment reached a maximum of 1200 volts on the car, and the charge disappeared quickly on standing. This is to be compared with 5,000 to 7,000 volts generated on cars whose tires had not been treated.

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GEOLOGY

Seek Way Into Caves Which May Rival Carlsbad

A SEARCH for openings into huge caverns near Winslow, Ariz., is being pushed by local citizens, in the hope that Arizona has unknown underground sights rivaling Kentucky's Mammoth Cave and New Mexico's Carlsbad Caverns.

Roofs of some of the Arizona caverns are believed to have been smashed down during the terrific impact of a 10,000,000-ton meteorite that crashed in northern Arizona, 25,000 years ago.

Interest in the caves was aroused when a TWA pilot, Capt. H. H. Holloway, sighted 38 craters between Chevalon and Wild Cat Canyons, and speculated that the giant meteorite had been responsible for forming the craters when it hit the earth 42 miles away. An expedition to study the 38-crater area, organized by Edsel Ford and TWA, was led by Dr. Harvey H. Nininger of the Denver Museum.

Agreeing with Capt. Holloway's view that the craters were probably a secondary result of the meteorite hit, Dr. Nininger said:

"A network of caverns had developed by the usual process of solution, and when the impact occurred the roofs of the caverns were shaken down, producing a unique and closely aggregated group of walled sinks."

After riding over the area on horseback, Dr. Nininger stated:

"I have no doubt that the unexplored Chevalon Canyon is pierced with caves and small openings which lead to great underground chambers. Many caves of enormous extent have only small connections with the surface and therefore remain undiscovered."

If cave openings are located, the Department of the Interior is to be asked to assign engineers and surveyors to study and map the area.

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ASTRONOMY

Major Sun Mystery Is Still Unsolved

THE COMING minimum in the 11-year solar cycle expected to occur within the next three years will give astronomers a chance to check again on one of the sun's greatest mysteries—the sudden reversal in the magnetic polarity of sunspots.

Dr. Seth B. Nicholson of the Mount Wilson Observatory in a report to the Astronomical Society of the Pacific stressed the importance of future research in this field.

So far the effect has been observed only three times. Although discovered 29 years ago by the late Dr. George Ellery Hale, former director of the Mount Wilson Observatory, no satisfactory explanation of the phenomenon is known.

Sunspots almost always occur in pairs having opposite magnetic poles, like the ends of a horseshoe magnet, Dr. Nicholson explained. At present in the sun's northern hemisphere the western half of a spot-group has a polarity like the north-seeking pole of a magnet. But this condition will be reversed for spot-groups of the new cycle if they behave as they have at previous minima.

"Despite the fact that we have accumulated a vast amount of exact information about the way sunspots behave, we still know very little about what makes them behave that way," he concluded. "We may reasonably hope that some of the most fundamental questions of physics, chemistry, and astronomy may be illuminated by an intensive study of solar magnetism."

Science News Letter, November 15, 1941

IN SCIENCE

BOTANY

Moss Growth in Caves Made Possible by Lights

GREEN mosses grow in the Luray Caverns of Virginia supported by the energy of the little man-made suns called electric lamps, strung along the rocky walls and ceilings to guide the steps of visiting tourist parties. Many persons have noticed the green color, but it remained for a scientist, Walter Lang of the U. S. Geological Survey, to have curiosity enough about its nature to collect some and send it away for identification (*Science*, Oct. 31).

At Harvard University, it was determined to be a moss, but its exact identity could not be made out. A botanist at the University of Michigan who specializes in the study of mosses, Prof. W. C. Steere, identified it as *Leptobryum pyriforme*.

The spores of the moss were probably originally carried into the caverns by surface water. In the caves' normal darkness they would have perished. But because of the artificial illumination they were able to germinate and now thrive wherever the light is strong enough.

Science News Letter, November 15, 1941

PLANT PATHOLOGY

Subterranean Gas Attacks Halt Eelworms' Inroads

EELWORMS, borers from beneath that cause large losses to all kinds of plants, can be effectively kept away from narcissus bulbs in commercial plantings with subterranean gas attacks, Dr. Benjamin G. Chitwood of the U. S. Department of Agriculture has discovered. (*Phytopathology*, August)

Dr. Chitwood uses two kinds of chemicals, ethylene chloride and chloropicrin. The latter is the tear gas of World War I fame. Either can be employed alone, or both in a mixture. The chemicals are injected into small holes in the soil, a few inches deep and a few inches apart. The pests can be kept under control in the field at a cost of \$110 an acre.

Science News Letter, November 15, 1941

NE FIELDS

FORESTRY

Fungus-Sick Trees Recover With Chemical Injections

CHEMICAL injections into sick trees, suffering from a fungus wilt disease, have arrested their illness and caused them to resume their growth, in experiments reported by Dr. Frank L. Howard of Rhode Island State College (*Science*, Oct. 10).

The chemical used is the di-hydrochloride salt of di-amino-azo-benzene. It antidotes the toxin produced by *Phytophthora cactorum*, which causes a wilt disease of many plants and the bleeding canker of hardwood trees.

Prof. Howard injected successfully 350 trees known to be infected with the bleeding canker fungus. Time will tell whether the cures are permanent and whether chemotherapy can be used on a large scale in control of plant disease as it has in human ills.

Science News Letter, November 15, 1941

PUBLIC HEALTH

Troops in North May Need Anti-Diphtheria Toxoid

U. S. soldiers and sailors sent on defense duty to northern latitudes should be given shots of anti-diphtheria toxoid, it appears from the report of Dr. Stafford M. Wheeler, of Harvard University, and Dr. Allan R. Morton, Commissioner of Health of Halifax, N. S., to the American Public Health Association.

Without presuming to recommend action to naval and military authorities, these physicians emphasized that the danger of a non-immunized person's getting diphtheria is greater the farther north he travels. The serious diphtheria epidemic in Halifax last winter showed that grown-ups as well as children in Northern regions need toxoid to protect them against the disease.

More than half the patients in this epidemic were adults. Even more surprising was the discovery that many more grown-ups in the Halifax area are susceptible to the disease than in regions farther south. Dr. Wheeler made a geographic study of diphtheria

susceptibility among grown-ups and found it was least in Alabama, and increased step by step as the tests were made on groups in Virginia, Baltimore, Kingston, Halifax, and Glace Bay, a Cape Breton town one hundred miles north of Halifax.

Why natural resistance to diphtheria grows less as one travels north is not yet known. The fact, however, suggests that not only soldiers and sailors but workers in defense industrial plants in the north may need toxoid to protect them against this sometimes fatal sickness which, even when not fatal, requires at least one month for recovery.

Science News Letter, November 15, 1941

METALLURGY

Electroplating With Iron Worth Further Study

PLATING a nobler metal with iron may seem like plating a gold watch with brass. Yet there are uses for just such a process. Although the commercial uses of iron plating are minor in character, they are sufficient in number and importance to justify further study of the subject, in the opinion of C. T. Thomas, technical aide of the U. S. Bureau of Engraving and Printing, expressed in a paper presented before the Electrochemical Society meeting in Chicago.

The most active interest in iron plating today, he declared, centers around its use in electroforming molds for rubber, glass and plastics, as perfected in the laboratories of the United States Rubber Company. The iron is electro-deposited on a pattern, thus forming a strong mold for the materials mentioned.

Another recent use is the production of electrolytic iron powder for plastic metals—developed at the Mellon Institute—which can be molded and compressed into shape and then becomes a solid mass like any other plastic.

Iron is cheap and abundant and has strength. It can be plated on the back of a finer metal to give it strength. This process has been used for making the plates for printing government currency and bonds. A nickel face is first deposited electrically on the mold, taking all its delicate detail. This is then backed by a heavy deposit of electrolytic iron.

Electrically deposited iron is very pure, resists rust and has unusual magnetic properties.

Iron plating has been used for more than a hundred years, Mr. Thomas said, but most of the uses are now obsolete.

Science News Letter, November 15, 1941

ARCHAEOLOGY

Indians Gave Dead Town White Sand Shroud

A DEAD town that Indians of long ago covered with a white sand shroud is the strange discovery of archaeologists in southwest North Carolina.

Belief that a large town which later grew up over the town grave was Guasili, where De Soto visited Cherokee Indians, is expressed by Frank M. Setzler of the U. S. National Museum and Jesse D. Jennings, in a Smithsonian Institution publication, just issued.

Long before De Soto, early Indians settling at this place built a curious temple of stone and wood with a wide stone bench around it, excavations have revealed. The roof of this temple collapsed, and the wreckage was then covered with earth, making a small mound. This mound and the surrounding village became the dead town, which was buried later in sand. And then, another Indian group used the mound as a core for a greater, taller mound with temples erected on top, and in the mound they interred six bodies — possibly religious sacrifices.

De Soto, it is believed, may have viewed this mound when it was topped by these temples, reached by stairs of log.

Science News Letter, November 15, 1941

PALEONTOLOGY

War Delays Replicas Of Dinosaur-Age Fish

MUSEUM visitors the world over will have to wait for the end of the war before they can see replica casts of the rarest fish in the world, the dinosaur-age, blue-eyed giant caught three years ago off the east coast of South Africa.

Word received in the United States from the East London, S. A., Museum states that the trustees of that institution have decided against having casts of the specimen made at the present time, because of the international situation. The Museum, however, wishes to be informed by any institution wishing to obtain a cast as soon as shipment becomes practicable, to facilitate plans for having them made.

The fish, belonging to a family thought to have become extinct 50 million years ago, is the greatest prize of the East London Museum. It has been given the scientific name *Latimeria chalumnae*.

Science News Letter, November 15, 1941



CHEMISTRY

Plastics in Defense

Pilots and Gunners Look Out Windows of Synthetics; Even Fuselage Uses Synthetic Resins; Industrial Uses

By WATSON DAVIS

PLASTICS are helping to make America strong in the air.

Essential parts of our airplanes are being made of these newer synthetic materials—fuselages, gun-turrets, observation “blisters,” shatter-proof windows, radio masts, fluorescent plastic instrument boards to aid night flying.

The all-plastic airplane is not yet here as far as first-line fighting and bombing

planes are concerned—it may never be. But synthetic resins of various sorts are taking the place of scarce metals, releasing them for more essential defense tasks and incidentally, often doing a better job.

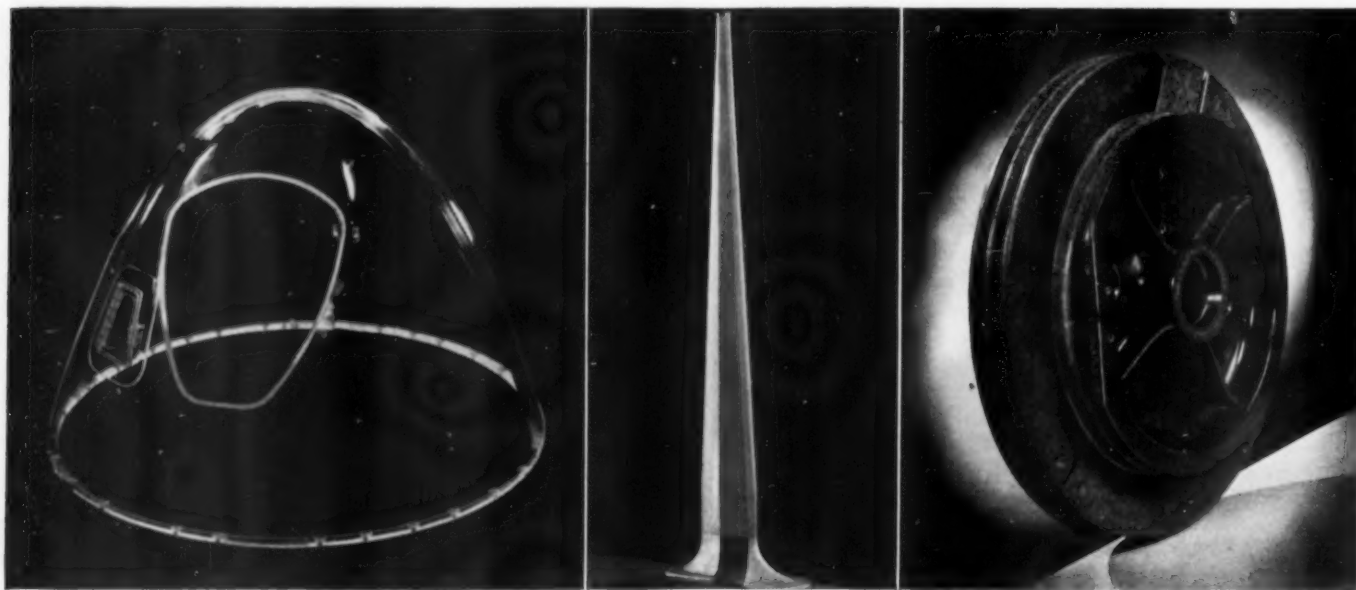
The rise of plastics to a major defense and industrial material is shown by the prize awards of the sixth annual modern plastics competition now being exhibited in the Department of Commerce building in Washington. Application of plas-

tics to military airplanes and to products of essential defense industries ran away with the show this year.

“The plastics industry is engaged in the gigantic task of closing the ranks

CLEAR VISION

At the top of the page is shown the Glenn L. Martin bomber. Its gun turret of transparent Plexiglass is shown here at the left. In the center is a radio mast tapering and streamlined. At the right is an aileron control pulley. On this wheel depends the safety of airplane and crew, for on it are wound the cables that control the handling of the plane.



of major material shortages in defense and major industrial civilian requirements," said Charles A. Breskin, publisher of *Modern Plastics*, in announcing the results of the competition. "Today plastic things have ceased to be mere novelties. They are doing an essential job in these critical days."

In two bombers in quantity production, pilots and gunners look out through large areas of transparent synthetic plastics, shaped to be a part of the airplane structure.

Plywood Studded by Windows

In another bomber the nose section of the fuselage is made not of the conventional aluminum but of plastic plywood, studded by transparent plastic windows. In addition to releasing aluminum, the laminated mahogany veneers bonded with plastic save 15 per cent. in weight with no sacrifice in strength and the rivetless surface through its smoothness results in increased speed. Mass production is speedier and cheaper.

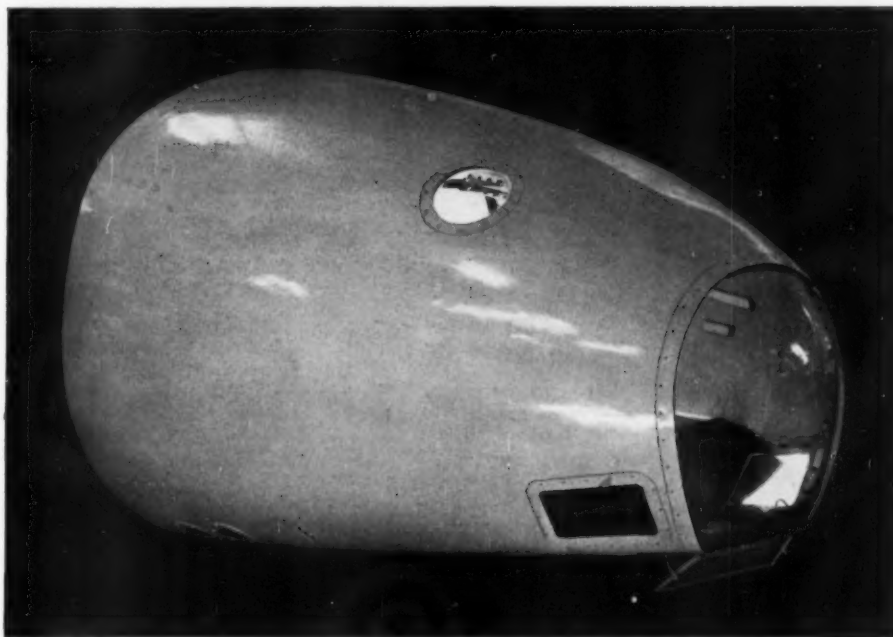
Many small but essential parts of airplanes, once made of metal, are now molded out of plastics. Radio masts, ventilators, and vital control aileron pulleys are some of these parts. In these there is not only a saving in weight and cost, but a gain in time of production because the plastic parts can be molded ready finished without any time-taking machine work.

Inside the plane, plastics provide the instrument panel, housings for the instruments and luminous dials for them and innumerable handles, knobs and switches. Panels that glow in ultraviolet or "black" light allow the pilot to see but are invisible to the enemy. Tanks made self-sealing by plastics hold the gasoline. Even the clothes, helmets and gloves of the aviators are composed in part of plastics and plastic textiles.

In Factory, Office, Home

In factories, offices, homes, and automobiles, plastics are replacing needed metals in furniture and equipment, telephones, cash registers, calculating and accounting machines, furniture, lighting fixtures, lamp shades and reflectors, radio and musical instruments, packaging, scientific instruments, games, toys, door-knobs, light switches and innumerable other small articles.

Plastics have come to the rescue of household apparatus the production of which has been imperiled by the metal shortage. Plastics are used for refrigerators, shower stalls, washing machines,



PLASTIC PLYWOOD

This nose section of a bomber is composed of a new material, plastic plywood.

fruit juicers, knives, vacuum cleaners, fabrics, window blinds, and textiles.

New upholstery fabrics made of plastics are soon to be used in subways, buses and theaters.

For black-outs, if they ever become necessary for America, plastics can provide soft, safe glowing light. Fluorescent materials placed in the transparent plastics will cause them to radiate mild light under the influence of invisible ultraviolet illumination.

The defense effort does not have as much of the plastics as it would like. There are few surpluses anywhere these

days because of the augmented defense production.

There are shortages of some of the plastics and some plants have difficulty in getting supplies for civilian use. Some of the chemicals used in plastic manufacture, such as formaldehyde, are short because they are made from chemicals that enter into munitions.

Plastics production is relatively not large. But the industry is growing fast and increasing military uses are paving the way toward widespread use of plastics when priorities are no longer needed.

Science News Letter, November 15, 1941

CHEMISTRY

New Process For Deodorizing Gasoline Lifts its Octane

Already in Commercial Stage, New Process Dissolves Mercaptans Instead of Merely "Sweetening" Them

A NEW method of purifying gasoline that not only removes its obnoxious odor but also lifts its octane number, thus requiring less tetraethyl lead for that purpose, was described by C. F. Mason, R. D. Bent and J. H. McCullough of The Atlantic Refining Co., Philadelphia, in a paper presented before the meeting of the American

Petroleum Institute in San Francisco.

The process is already in the commercial stage and several plants are preparing to use it.

The unpleasant odor of gasoline is due to certain sulfur compounds called mercaptans. They are the same that give to the skunk its unsociable aroma.

A process of "sweetening" gasoline

has been used for many years. It is effective but expensive. It converts the mercaptans to odorless sulfur compounds which, however, remain in the gasoline and act as "poisons" that reduce the effectiveness of tetraethyl lead in raising its octane rating.

The new process removes the mercaptans from the gasoline—takes them away entirely—by dissolving them out. The gasoline thus has already higher anti-

knock qualities than untreated or "sweetened" gasoline and requires less ethyl to raise it to the desired standard.

The solvent contains caustic soda, commonly used to clean drain pipes, and methanol, an alcohol much used as an anti-freeze in automobile radiators. After use, the solvent is itself purified and can be used over and over again.

Science News Letter, November 15, 1941

MEDICINE

Vitamin K May Help Control Hemorrhage in Tuberculosis

Vitamin Relieves Prothrombin Deficiency, Found in About a Half of Patients Proportional to Sickness

THE anti-bleeding vitamin K may help to check hemorrhage in patients with tuberculosis of the lungs, Dr. R. F. Sheely, of the White Haven, Pa., Sanatorium, reports (*Journal, American Medical Association*, Nov. 8).

In four patients given doses of this vitamin after they had had hemorrhage, the bleeding was checked fairly quickly, judging by the fact that within a day or two after the vitamin treatment the sputum was no longer streaked with blood.

Vitamin K acts to check bleeding by stimulating production of prothrombin, a substance necessary for the normal

clotting of blood that is shed. A significant deficiency of prothrombin was found in 51 of 106 patients with active and chronic pulmonary tuberculosis, Dr. Sheely reports. The sicker the patient, the greater was the prothrombin deficiency. Dr. Sheely believes that the prothrombin deficiency in tuberculous patients can be relieved by injections of vitamin K. This would also increase the tendency to clotting of the blood, which would help to control spontaneous hemorrhage and would also help to prevent hemorrhage if surgical operations needed to be performed on the patients.

Science News Letter, November 15, 1941

PUBLIC HEALTH

Pneumonia Mortality Declined During Influenza Epidemic

A DECLINE in pneumonia deaths during an influenza epidemic occurred, for the first time on record, during the winter of 1940-1941, statisticians of the Metropolitan Life Insurance Company announce.

A minimum figure for pneumonia deaths below which further sizable reduction is unlikely is being approached, their studies indicate.

Fatal pneumonia cases are now concentrated in young children and comparatively old people. Many of the deaths, about one-fourth in the opinion of attending physicians, were due to

complicating diseases with pneumonia.

Sulfa drug treatment seems to have largely replaced serum treatment, the study showed. Sulfathiazole was the favorite drug last winter, but sulfadiazine is likely to be used far more widely this coming season. Bacteriological studies to determine the germ responsible for the pneumonia in each case seem to have been largely abandoned in urban centers.

Delay in calling doctors was frequent in the fatal cases of pneumonia. Even among older people with chronic disease more are dying of pneumonia than

need to, and many people still suffer attacks of pneumonia which might be prevented.

"Further reduction in pneumonia mortality is attainable and worth fighting for," the statisticians conclude from their studies.

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recent series is under 5%, less than half that of the earlier series.

The great danger in appendicitis when the appendix ruptures is that of peritonitis from germs which escape from the appendix. Sulfathiazole helps the body to fight this germ attack as it helps fight such germ attacks as pneumonia.

Science News Letter, November 15, 1941

Iodine Without Thyroid

UPSETTING previous ideas of how the body uses iodine, a chemical known to be essential to health, Dr. Asher S. Chapman, of the Mayo Clinic, has discovered that the body can use this element even when the thyroid gland has been removed.

Thyroxine, the powerful hormone produced by the thyroid gland, contains iodine and it has generally been thought that the effects of iodine on the body and the body's need for it were determined by this gland.

Animals whose thyroid glands had been removed, Dr. Chapman found, lost more weight, utilized their food more poorly, drank more water and had a significantly lower basal metabolic rate when kept on diets very low in iodine than when given adequate iodine.

The body, it appears, from these studies, not only can use iodine when there is no thyroid gland to turn it into thyroxine for stimulating various body processes but may even make a compound like thyroxine in tissues other than the thyroid gland.

Science News Letter, November 15, 1941

● RADIO

Thursday, November 20, 3:45 p.m., EST

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Morton C. Kahn, of Cornell University Medical College, will discuss the prevention of tuberculosis.

Listen in each Thursday.

Monday, November 24, 9:30 p.m., EST

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.



Westinghouse Brings Safety to Seadromes with
LIGHT CONTROLLED BY RADIO

When ocean travel by air brought Rio closer to Miami, it also brought an entirely new problem to aviation—the problem of safe night landing on water for giant clipper planes.

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Portable units, designed for transportation by air to remote bases, are controlled by land radio. Boundary and contact lights can be operated separately. A single lane of contact lights or various lights within a lane

can be controlled by the shore radio to meet the landing plane's requirements. Transoceanic flying will be revolutionized by this new light, developed by Westinghouse in collaboration with Firestone, that brings greater safety to seadromes.

Aviation, like other industries, is finding that electricity is the answer to many of today's rush production problems. A phone call to our local office will bring one of our representatives to help you with yours.

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Future advertisements on this page will describe how Westinghouse is helping in the aviation . . . mining . . . steel . . . metal-working . . . and other industries. Watch for these stories.





Corn and Weeds

CROP plants and weeds often have the same preferences when it comes to growing conditions.

The curse pronounced upon the earth under Adam's handiwork: "Thorns and thistles shall it bring forth to thee," might be regarded as a poetic expression of the inherent ecological similarities between most crop plants and the commonest weeds. Both corn and cocklebur, wheat and Canada thistle, like the same richness and moisture in soils, the same growing temperatures and times of rain.

Most of all, weeds like to have their soil well stirred, like good porridge, just as our preferred crop plants like it. So when the farmer plows his field and makes it ready for his crops, he plows it also for the uninvited plant guests that take care of their own sowing. And they are usually quicker about getting up than the seed which he plants with such tender care.

You can get an idea of the natural preferences of common weeds by noting where they grow when (if ever) they are found away from cultivated soil. Ragweed and pigweed, goosefoot and velvet-leaf and all their vagabond kin, are to be found in situations where some natural disturbance of the soil

more or less closely simulates the tilth of a cultivated field. You will find them where gully erosion or land-slipping has exposed fresh soil surface, or on river-bottom land where newly deposited mud is drying out in the wake of a receding flood.

The surest way to get rid of weeds is to give up trying to cultivate crops. Let a field lie fallow long enough, and after a couple of years of initial weed triumph the quiet insidious grasses will start edging in, and presently they will present a solid phalanx of sod that will resolutely prevent any weed seed from gaining the least foothold. It is even possible that the treeless condition of the prairies, before the virgin sod was plowed to make way for corn, was due to this interlocking front of the grasses, that prevented tree seeds from reaching moist soil and germinating.

It is noteworthy that most of our common weeds resemble crop plants not only in their ecological preferences but in their life history. That is, the greater number of weed species are annuals. Like the crop plants with which they compete, they depend on large production of quick-germinating seeds every year, which can be scattered as widely as natural means will permit, ready to seize and exploit any square inch of unoccupied soil.

Science News Letter, November 15, 1941



SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

SCOTCH PLAINS, N. J.—The Science Research Club of Scotch Plains High School, sponsored by H. S. Gutknecht, head of the Science Department, prepared a radio script dramatizing the work of Sir Frederick Banting, recently killed in an air crash. The story of the famous scientist's discovery and isolation of insulin was impressively delivered over the school's public address system.

HURLOCK, Md.—The ? Or Why Club, sponsored by Miss Helen Warren, has divided

into three groups, one making a model airplane, another working with the microscope, and the third developing individual scientific projects.

NEW YORK CITY—The Biology Squad of the DeWitt Clinton High School, under the direction of Miss Dorothy P. Tuthill, is working out advanced research problems in slide making, hydroponics, genetics experiments with fruit flies, guinea pigs, tropical fish, and the preparation of museum mounts such as stained bone and tanned skins.

ONEONTA, N. Y.—The Chem Squad of Oneonta Senior High School, sponsored by Mrs. Madeleine Frink Coutant, who is also Director of the Oneonta Science Center, is holding monthly movie shows on scientific topics not taught in high schools. In February the Squad will visit a science club in Walton, N. Y., and early in May will feature a Science Congress.

BROOKLYN, N. Y.—Members of the A. L. Chemists of Abraham Lincoln High School are developing Science Congress demonstrations in Science Fair exhibits under the sponsorship of N. Roseman. Laboratory demonstrations and experiments are a regular feature of the club's program.

HARRISON, N. Y.—Chemistry, biology, physics and astronomy are major interests of the Kohut School Science Club, sponsored by Albert J. Metlicka. The club also works on photography and makes many field trips for nature study.

BRONX, N. Y.—Members of the Morris High School Photography Club, sponsored by Miss Gisella Kauf, teach developing, printing and enlarging to interested students who have not had much experience in this field. Various club members give lectures and demonstrations and produce photographs used in the school newspaper.

DELMAR, N. Y.—The Eighth Grade Science Club at Bethlehem Central School, sponsored by Philip B. Moore, is holding class room demonstrations, assembly programs, laboratory experiments, field trips and scientific movies.

BROOKLYN, N. Y.—The Physics Club of Abraham Lincoln High School is developing projects to illustrate interesting and showy experiments in physics. Demonstrations are held at regular club meetings under the sponsorship of Louis Steinberg.

Clubs are invited to become affiliated with SCA for a nominal \$2 for 20 members or less. You can become an associate of SCA for 25 cents, which includes a copy of the 128-page Science Handbook for 1942. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

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New Machines And Gadgets

Novel Things for Better Living

For blackout nights or last-minute makeup in the taxi or in a dark doorway, girls will welcome a new illuminated vanity case. It contains a small built-in flashlamp provided with reflector and translucent diffuser which throws a soft, flattering light on your face when you look at yourself in the mirror. The lamp lights when you open the case and goes out when you close it. The inventor has been awarded patents on a variety of forms of the invention.

Now you can see the stars through the roof of your car or, if your interests while driving are more mundane, you can see a high traffic light without leaning forward—something the present low windshields do not permit. This contribution to safe driving is not a roof window, but an extension of the windshield a little ways up onto the roof. It has been awarded a recent patent.

An ink well which, though always open, never spills, even if you turn it upside down and shake it, is an invention recently patented. It is a simple little thing. Why didn't I think of it myself? It's as easy as Columbus's egg. A piece of sponge rubber fits accurately inside and soaks up all the ink. Consequently it can't spill, whatever you do, except break the bottle. But when you dip a pen in and depress the rubber, ink flows into the cavity formed. And when you remove the pen, the cavity closes up and all the ink remaining is reabsorbed.

Manicure your nails by machinery. Men have the electric razor, why shouldn't girls have the electric nail polisher and trimmer? They should and can—for it has already been invented and patented. You hold it in one hand, turn on the switch, and either a rotating file or polisher can be brought into contact with the fingernails of the other hand. Both the file and the polisher are large flat disks that will not soon wear out.

Gas, of all things, is coming into use for electrical insulation. It is used in the new million-volt X-ray transformers and now in underground electric cables, for which patents have recently been granted. The usual insulation on the wires is retained, the gas merely filling the spaces between the wires. Oil and other liquids were previously used for this purpose.

This is an X-ray photograph of a motorcar crankshaft taken with a 400,000-volt X-ray machine. Any flaws would be indicated on this negative by dark spots or streaks. The picture re-



quires but a few minutes to take, whereas older and less powerful machines required two to six hours.

Suburban husbands rejoice! Raking up leaves in the Autumn will no longer be quite the pesky chore it always has been. Chief annoyance, of course, next

to doing the job at all, is the irritating way the leaves stick to the rake, necessitating every now and then lifting it up and picking the leaves off with your fingers. A rake-cleaning attachment, just patented, avoids all this. You just push a sleeve on the handle of the rake and, presto, the leaves drop off.

A bib for the nurse or mother instead of for baby is a novelty just patented. It ties round the neck like any other bib but hangs both in front and in back, so that mother's dress is protected when baby is held over the shoulder in the air-expelling after-feeding position.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C. and ask for Gadget Bulletin 79.

CHEMISTRY—AGRICULTURE

Test to Tell Virgin Soil Relies on Heavy Minerals

A WAY to tell whether or not soil has ever been cultivated has been developed by Dr. H. J. Lutz, of Yale University (*Science*, Oct. 10). Soil that have been plowed and cultivated contain a consistently higher percentage of heavy minerals in their upper layers than do comparable virgin soils.

Science News Letter, November 15, 1941

THE GENETIC AND ENDOCRINIC BASIS FOR DIFFERENCES IN FORM AND BEHAVIOR

as elucidated by studies of contrasted
pure-line dog breeds and their hybrids

CHARLES R. STOCKARD, COLLABORATORS, AND O. D. ANDERSON
AND W. T. JAMES

THIS American Anatomical Memoir No. 19 presents the results of an extensive series of new experiments on pure bred dogs and their hybrids, with a comprehensive discussion of the investigations, including: Varieties of Form Among the Dog Breeds—The Primitive and Wild Ancestral Dog Type—Inheritance of Dwarfism—Modifications of Head Types and Forms by Genetic and Endocrine Reactions—Microscopic Analysis of The Endocrine Glands—Morphologic Form and Its Relation to Behavior—Function of Endocrine Glands in the Production of Behavioral Types by Gland Ablation and Administration of Glandular Extracts.

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•First Glances at New Books

MEDICINE

THE MAN WHO LIVED FOR TOMORROW, A Biography of William Hallock Park—Wade W. Oliver—*Dutton*, 507 p., \$3.75. This is the story not only of William Hallock Park but of the fight waged by him and his assistants in the Bureau of Laboratories of New York's Health Department and by bacteriologists and other scientists all over the world to protect the lives and health of men, women and children threatened by such plagues as diphtheria, tuberculosis, typhoid fever, influenza and other communicable diseases. It is an exciting story of discovery and of application of discovery in methods of health protection.

Science News Letter, November 15, 1941

GENERAL SCIENCE

AMERICA PREPARES FOR TOMORROW, The Story of Our Total Defense Effort—William Dow Boutwell, B. P. Brodinsky and others—*Harper*, 612 p., \$3.50. A sort of detailed guide and handbook to America preparing to defend itself. Not much science as such, but it is a good springboard for those who have not kept up with Washington. Almost daily supplements are needed, however.

Science News Letter, November 15, 1941

AGRICULTURE

WE WANTED A FARM—M. G. Kains—*Greenberg*, 228 p., \$2. Anyone who has ever wished they had a farm or hoped to have one will be interested in reading how one couple tried their hand, first, at suburban gardening and finally bought and ran successfully the farm of their dreams.

Science News Letter, November 15, 1941

ECONOMICS

YOUR INCOME TAX, 1942 ed.—J. K. Lasser—*Simon and Schuster*, 144 p., \$1. Millions more, around March 15, 1942 will need such first aid as this.

Science News Letter, November 15, 1941

POLITICAL SCIENCE

A QUEST FOR INTERNATIONAL ORDER—Jackson H. Ralston—*John Byrne and Co.*, 205 p., \$2. A discussion of international law and affairs with the desire of finding a way that the world can be run without war.

Science News Letter, November 15, 1941

PSYCHOLOGY

DECIDE FOR YOURSELF, A Packet of Original Materials on a National Issue, Selected From the Literature of Major

Interest Groups by the Institute for Propaganda Analysis—*Institute for Propaganda Analysis, Inc.*, \$1 per packet. These packages of propaganda material with analysis are issued 12 times a year. You can subscribe to them or can get single packages. One, on "Negroes are asking about democracy," contains samples of propaganda on both sides of this burning American social question together with material intended to aid you in evaluating them.

Science News Letter, November 15, 1941

PHOTOGRAPHY

PHOTOGRAPHY AS A VOCATION—Andrew B. Hecht and George J. Berkowitz—*Science Research Associates*, 48 p., illus., 50c. One of a series of booklets on occupations in America intended as an aid in the selection of a career.

Science News Letter, November 15, 1941

PALEONTOLOGY

PALEOZOIC GASTROPOD GENOTYPES—J. Brookes Knight—*Geological Society of America*, 510 p., 96 pl., illus., \$4.50. Describing and figuring as it does one of the most important groups of key fossils, this monograph will be eagerly welcomed alike by paleontologists and students of historical, structural and economic geology. Rendition of texture in the plates is excellent; it is the next best thing to handling the specimens themselves.

Science News Letter, November 15, 1941

GEOGRAPHY

1941 YEARBOOK, PARK AND RECREATION PROGRESS—U. S. National Park Service—*Govt. Print. Off.*, 92 p., illus., 40c. A progress report, telling what national and local recreation officials find practical and worth doing for the American people. Experiences with such matters as roadside development, historic house restoration, and camp programs for city boys, are among topics discussed.

Science News Letter, November 15, 1941

MATHEMATICS—FINANCE

THE MATHEMATICS OF FINANCE—Llewellyn Rood Perkins and Ruth Marion Perkins—*Wiley*, 321 p., \$3.25. A handbook for those working in the field of finance, although written primarily for use in colleges and business schools by students who have a good grounding in algebra. There are many tables and formulas which have been presented with an eye to mechanical computation.

Science News Letter, November 15, 1941

ASTRONOMY

BETWEEN THE PLANETS—Fletcher G. Watson—*Blakiston*, 222 p., illus., \$2.50. Comets, meteors, and asteroids; where do they come from and what are they doing wandering about among our planets like lost souls? These and many other questions are answered in this book, one of the nine "Harvard Books on Astronomy," edited by Dr. Harlow Shapley and Dr. Bart J. Bok. Actually, we are told, their motions though confusing are just as orderly and gravitationally controlled as those of the more sedate planets—and they are made of the same stuff.

Science News Letter, November 15, 1941

ETHNOLOGY

MARRIED LIFE IN AN AFRICAN TRIBE—I. Schapera—*Sheridan House*, 364 p., illus., \$3.50. An ethnological account of marriage as it was among the Kgatla of South Africa before white men arrived, and how it has since changed, with a summing up of gains and losses in the process.

Science News Letter, November 15, 1941

MATHEMATICS

MATHEMATICS, Its Magic and Mastery—Aaron Bakst—*Van Nostrand*, 790 p., \$3.95. Besides entertaining the reader with the curious and amusing, this book aims also to interest him in mathematics by exhibiting its uses in everyday life, in business, science and industry. The approach is historical and the range is through trigonometry and logarithms. Problems and puzzles are given for the reader to solve—with answers in the back of the book.

Science News Letter, November 15, 1941

ICHTHYOLOGY

RETURN TO THE RIVER, A Story of the Chinook Run—Roderick L. Haig-Brown—*Morrow*, 248 p., illus., \$3. An account of the Chinook salmon and the fisheries dependent on that species, smoothly woven into narrative form and superbly illustrated. One can learn a lot about a magnificent fish from this book—and get a great deal of enjoyment out of the learning.

Science News Letter, November 15, 1941

BOTANY

CHICLE, JELUTONG AND ALLIED MATERIALS—E. H. G. Smith—*Imperial Institute; Available through British Library of Information*, 22 p., 30c.

Science News Letter, November 15, 1941